

***Report No. UT-98.16***

***USE OF BEST VALUE  
SELECTION PROCESS  
FOR THE I-15  
DESIGN/BUILD PROJECT***

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## UDOT RESEARCH & DEVELOPMENT REPORT ABSTRACT

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<b>16. Abstract</b> <p>This report describes the selection process used by the Utah Department of Transportation (UDOT) to hire a design/build team for the I-15 Design/Build reconstruction project in Salt Lake City. UDOT decided to use a "best value" selection process rather than low cost to select a contractor. Ultimately, a consortium known as Wasatch Constructors was selected to design and build the 17 mile corridor.</p> <p>Carter &amp; Burgess, Inc. was retained by the UDOT to evaluate and report on the best value selection process. The evaluations were completed in part, to fulfill commitments made to the Federal Highway Administration (FHWA) for granting a special Experimental Project 14 (SEP-14) status to the I-15 project permitting design/build contracting methods.</p> <p>The report discusses comparison between design-bid-build and design/build processes. It describes, in detail, the "best value" selection process used by UDOT to evaluate and select a contractor. A description of the organizational structure required to prepare and review the proposals is presented. Unique features for the UDOT process are discussed, including use of stipend, risk sharing, ISO 9000 certification, design life, performance specifications, Best and Final Offer (BAFO), award fees and use of CD-ROMs to distribute the proposal information. Lessons learned during the process are also reported.</p>					
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## **PURPOSE OF REPORT**

This report presents information about UDOT's selection process used to procure a design/build contractor for the reconstruction of I-15 in Salt Lake City. This report supplements information contained in the first annual report, *"Design/Build Contracting Initial Report"*, published by UDOT in October 1997. UDOT decided to use a "best value" selection process rather than "low cost" to select a contractor for this project, this report describes that process in detail along with other background information.

## **BACKGROUND**

I-15 in the Salt Lake Valley was essentially completed in the early 1960's. By 1980, considerable congestion had begun to result in significant operational problems. In addition, 30-years of increasing traffic loads and the use of de-icing salts had resulted in severe deterioration of most of the bridges and elevated structures. Additionally, none of the existing structures had been designed to meet current seismic design standards.

To meet increasing traffic demands, the Wasatch Front Regional Council (WFRC), the Metropolitan Planning Organization, and Utah Transit Authority (UTA) were concurrently considering options to expand transit service within the Salt Lake Valley. Consequently, the decision was made to prepare a joint highway and transit needs and environmental study of the corridor. This resulted in the determination that I-15 needed to be reconstructed and additional capacity added to keep pace with the considerable growth occurring in the Salt Lake Valley specifically. Part of this reconstruction decision was to develop a fixed rail transit system (Light Rail) to serve the corridor.

UDOT began developing a program to expand and upgrade I-15 about 1990. The consulting firm of Parsons, Brinkerhoff, Quade and Douglas (PBQ&D) was hired to begin development and planning of a traditional design-bid-build project to replace approximately 26 km (17 miles) of urban interstate highway, including some 130 structures, eight urban interchanges and three major freeway to freeway junctions (I-15 connections with I-80 and I-215). Funding of the construction was a limiting factor that necessitated dividing the project into 20 segments to be constructed in phases, depending upon available funding, over an eight to ten year period.

The results of the December 1995, Governor's Growth Summit and UDOT public opinion surveys, focused attention on the I-15 corridor and the need to complete the reconstruction in a more timely manner. Six months earlier, Salt Lake City had been awarded the 2002 Winter Olympic Games. After an investigation of possible alternatives to expedite the construction of the project, UDOT decided in January 1996, to use Design/Build as the contracting method to complete the reconstruction. Consequently, the Utah State Legislature established the Centennial Highway Fund in February 1996 to address the unfunded transportation needs across the state with the I-15 reconstruction project as the centerpiece of that plan. A major objective was to complete the I-15 reconstruction in a shorter time period to reduce travel impacts prior to the beginning of the Olympic games.

## **SELECTION SCHEDULE**

In February 1996, UDOT contracted with PBQ&D to assist them in developing a request for proposal (RFP) for procuring the services of a Design/Build entity to complete the reconstruction project. Concurrent with the RFP development UDOT awarded several contracts to consulting engineering firms to prepare portions of a preliminary design of the project for use in the RFP. Part of this work included conducting an extensive geotechnical investigation of the corridor to provide foundation information that would be included in the RFP. Plans were

developed by UDOT staff for suitable detour routes using existing parallel streets and expanding their capacity by adding additional lanes, improving intersections and traffic signals and other improvements.

In March 1996, a request for a letter of interest (LOI) was advertised internationally to identify potential entities interested in proposing on the project. Information meetings were held in May 1996, to brief interested firms on the project scope. On May 30, 1996, a formal request for statements of qualifications (SOQ) was issued providing information concerning the project scope, and instructions to potential bidders on the content and format of the SOQ and the criteria to be used by UDOT in evaluating the submittals. The submittals were due July 1, 1996, with expectations that as many as five groups would respond to the request.

This process was used by UDOT to screen potential firms with the intent to limit the number of potential bidders to no more than five firms. A qualification evaluation board was established to evaluate the submittals and determine which were qualified to propose on the project. Three SOQ's were received and each was judged qualified to proceed to the proposal stage.

On August 1, 1996, UDOT issued a draft Request for Proposal (RFP) to each of the three prequalified firms, requesting each to review the draft RFP and respond to UDOT with any comments, concerns or suggestions. UDOT also held individual face to face discussions with each group. UDOT modified the RFP and issued it in final form on October 1, 1996. Proposals were due January 15, 1997. Additional intermediate dates were established for:

- Submission of comments or requests for clarifications of the RFP
- Submission of technical concepts and requests for exceptions and deviations from the RFP
- Submission of an Air Quality Emission Control Plan
- Target dates for addenda to the RFP initiated by UDOT.

The RFP contained provisions for a Best and Final Offer (BAFO) process that UDOT could invoke, at their option (which was subsequently done). BAFOs were submitted to UDOT on March 7, 1997.

An award of the contract was announced on March 26, 1997, to a consortium of firms named Wasatch Constructors, led by Kiewit Pacific, Granite Construction and Washington Construction. The team also included a number of engineering design firms lead by Sverdrup Civil and De Leuw, Cather and Company. The award was made on the basis of "best value" determination and Wasatch was judged to have an "Exceptional" technical evaluation. The amount of the awarded contract was \$1.325 billion, which included the base bid and several construction options.

## **COMPARISON OF THE DESIGN/BUILD PROCESS TO TRADITIONAL CONTRACT**

### **Traditional Contracting Approach**

Public agencies have predominantly relied on competitive bidding to award highway construction contracts. This process involves preparing detailed plans, specifications and estimates for the work involved, a solicitation of bids through public advertisement and award of the contract to the lowest responsible responsive bidder. Authority to construct the project is obtained by the agency from appropriate public entities prior to bid advertisement. This may involve permits from environmental agencies and water management authorities, agreements with railroad and utility companies and maintenance agreements with local jurisdictions. All necessary right-of-way and construction easements are determined and acquired prior to contract advertisement.

The basic intent of this approach is to minimize risk to the contractor by defining all requirements of the project and eliminating most unknown conditions. Any errors and omissions in the plans or unforeseen work is the responsibility of the agency. Quality is assured through prescriptive plans and specifications coupled with construction oversight and inspection by the

public agency. Cost is controlled by competitive bidding among contractors who have been prequalified by the agency to perform the work.

### **The Design/Build Process**

With this contracting method the design and construction are combined in one contract which is awarded to a single design/build team. Construction permits and approvals, as well as railroad and utility agreements may be the responsibility of the team. However, because of legal issues and the unique expertise involved, right-of-way acquisition is usually handled by the agency. The team may be responsible for construction inspection with independent assurance by the agency or inspection may be performed by the agency in the traditional manner.

The decision to use a design/build approach is usually schedule driven. By combining the design and construction in one procurement significant time savings can be realized. Procurement of materials and actual construction may begin prior to completion of plans and specifications. Equally important, by combining the expertise of the designer and builder more efficient design, construction sequencing and maintenance of traffic schemes may be achieved thereby reducing contract time and improving performance of the facility during and after construction. Additionally, having design and construction responsibilities under "one roof" can result in time reductions in the design process. Contract duration may be specified by the agency but usually it is left to the design/build team and considered as one of the criterion in selecting the best proposal.

The UDOT "best value" selection process involved a qualitative evaluation of proposals from prequalified teams. Rankings for schedule, quality and cost were developed based on predetermined criteria. Technical rankings were then combined with the proposed cost to determine the best value and recommend award of the contract.

A more common approach involves competitive ranking of interested teams based on technical qualifications and past experience. A "shortlist" of design/build teams then bid for the contract with award made to the lowest responsible bidder. This approach reduces the influence of qualitative rankings in the ultimate selection but tends to minimize innovation by the teams.

The design/build approach shifts a larger portion of risk from the owner to the contract team by requiring plans, specifications and estimates to be the responsibility of the contractor. Plan errors and omissions and unforeseen work are the design/build team's responsibility. This aspect of the design/build process is significant in reducing contract disputes, claims and cost increases during construction. However, because the contractor assumes more risk the price may be increased accordingly. The cost of increased risk may be offset by innovative design, early procurement of materials and overlapping the design and construction phases. Since most design/build procurements are, in effect, lump sum contracts the agency has greater confidence in cost containment. Financial planning for major contracts using the design/build method is therefore more predictable than traditional contracting methods.

In summary the design/build process has a number of distinct advantages over the traditional design-bid-build process.

- *Single entity responsible for design, construction and inspection.* Communication and coordination are more effective; reducing conflicts and resolving disputes quicker.
- *Reduced risk to agency.* Clarification and/or correction of plans in the field is the responsibility of the contract team. Overruns, change orders and supplemental agreements are virtually eliminated. Risk can be shifted more or less to the design/build team, depending on agency philosophy and nature of the project.
- *Significant time savings.* Construction begins during plans development. The team designs the project based on contractor's strengths (labor, equipment, and expertise).

- *Firm cost of project.* Lump sum contracting and transfer of risk to the contractor enable the agency to better predict costs. Improved reliability of cost estimate greatly improves financial management.
- *Improved quality.* Teaming allows for greater innovation and creativity. Constructability and maintenance of traffic are often significantly improved. More responsibility for construction quality is shifted to the contractor. Life cycle cost provisions, warranties and long term maintenance may be included in the contract to increase quality.
- *Outsourcing/Privatization.* Allows greater utilization of the private sector in design and construction management. This is more efficient than staffing up for a single major construction project or program.

UDOT opted to use the design/build process for the significant timesaving potential and the potential to reduce driver inconvenience with a shorter length construction period. Their desire to complete the project prior to the 2002 Olympics was also a contributing factor. Another significant factor was the ability to define costs early. Funding for the project was not completely secured beforehand and having a firm price for the work enabled UDOT to complete development of the funding plan for the project.

## **SELECTION PROCESS**

### **Value Based Selection Process**

UDOT was concerned about making an award based solely on low bid for this project, since detailed plans would not be available for use by the proposers. UDOT further wanted to permit proposers to submit innovative ideas for use in both the design and construction while being able to award the contract to the firm(s) who made the proposal considered to be of "best" value to the State. This allowed consideration of innovative materials, processes or designs to determine whether these provided more value than alternatives proposed by other teams.

To meet these goals, UDOT developed a process they termed "best value selection" to select a firm for this project. A criterion was established for use in proposal evaluation. UDOT separated the evaluation of the technical aspects from the cost aspects to minimize the subjectivity of the evaluation. Only a small, select group of individuals were aware of both the cost and technical evaluation results and this group made the final selection of the contractor.

To enable UDOT to award on a design/build and "best value" basis special legislative authorization was enacted. The rules written for the authorization permitted UDOT to award on anyone of the following conditions:

- Award to the responsible proposer offering the lowest priced responsive proposal. If the RFP includes a mandatory technical level, no proposal shall be considered responsive unless it meets that level.
- Award to the responsible proposer whose proposal is evaluated as providing the best value to UDOT.
- If the RFP provides for a stipulated sum, award to the responsible proposer whose proposal is evaluated as providing the best value to UDOT.

## **REVIEW PROCESS**

UDOT wanted to make a selection based upon "best value" and not just the lowest price or capital cost. The evaluation was intended to weigh cost and technical competence equally. To accomplish this in the most impartial manner it was decided to evaluate each of the two aspects independently. To further enhance the process the evaluations of price were completed without disclosing the identity of the entity making the proposal, or a "blind" review.

This was accomplished by establishing strict controls over document distribution and confidentiality, and eliminating any reference to the firm or its members in the written price



information. Separate and distinct review teams were used so they would not see both technical and price submittals. The review of teams was limited to specific areas, and a detailed procedure was developed to evaluate the submittals. UDOT developed a set of guidelines and held training sessions with each evaluation team to assure that they understood their role and the requirements of their individual reviews. UDOT established a contracts management group whose function was to monitor the process, coach the individual teams through the process, and secure the integrity of the process by safeguarding all of the proposal information.

The Technical Evaluation Board (TEB), composed of eight people, was responsible for the technical review. This board supervised the detailed review of the proposal conducted by several technical groups, each of which evaluated specific technical areas of the proposal. Four primary technical areas were established, listed in descending order of importance:

- Technical Solutions
- Work Plan/Schedule
- Management
- Organizational Qualifications

The technical solutions were further divided into several sub-factor groups. The organizational charts (Figure I) show each of the technical areas and the number of reviewers assigned to each. There were some duplications of team assignments with a total of sixty-one people assigned to the various technical review committees. (Figure 2 is a flow chart of the process used).

The technical reviewers assigned adjectival (rather than numerical) ratings in each area. The ratings were:

- Exceptional (E)
- Good (G)
- Acceptable (A)
- Susceptible to becoming acceptable (S)
- Unsatisfactory (U)

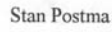
Reviewers could further distinguish rankings by adding a plus ( + ) or minus ( - ) to these grades for ranking. These grades were then weighted for the value or significance of the technical factor and a composite grade determined.

Simultaneously prices were evaluated by the Price Evaluation Team (PET). This team completed an evaluation of the prices submitted by proposers using forms furnished in the RFP by UDOT, which separated costs into specific areas for evaluation. The team checked the price submittals for accuracy, price realism, balance and reasonableness as compared to other bidder's prices, with pricing data available to the team and with the UDOT Independent Estimate.

Once a review was made of both the price and technical factors, UDOT had the option to award the contract on the basis of this review, or they could proceed to a "discussion" level of review and BAFO. At this stage the review team could ask oral or written questions of bidders to obtain additional information concerning their original submittals. The additional information was restricted to the following areas:

- Advising bidder of significant weakness or deficiency so that bidder could modify their proposal to meet the minimum standards
- Attempting to resolve uncertainties or obtain clarifications
- Resolving any suspected mistakes in the submittal
- Providing a reasonable opportunity for proposer to submit any price, technical or other revision. In this case, UDOT was only permitted to tell proposer their price was too high, too low and/or unrealistic.

## E



Source: UDOT 1-15 Team

## Evaluation and Selection Organization Chart

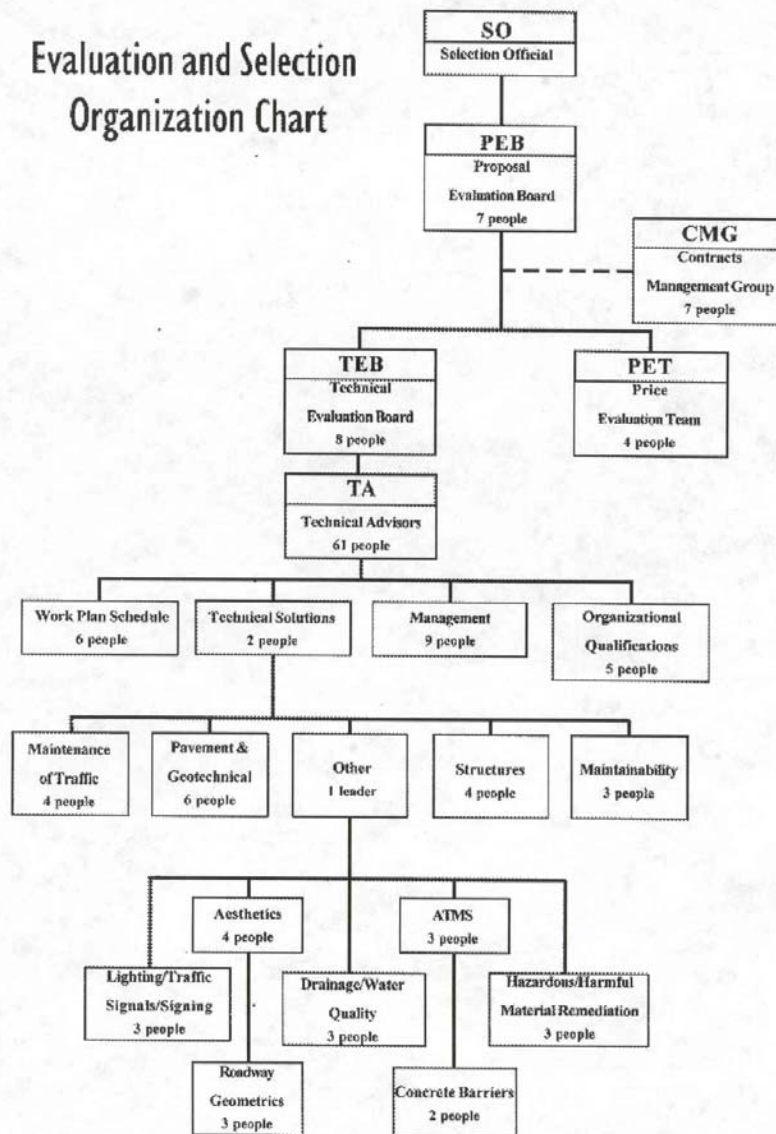


Figure 1-1

To ensure an atmosphere of fairness, if discussions were begun with one proposer, then discussions had to be held with each proposer. In lieu of oral discussion, written questions were submitted to each team for response. No indications were given on what the price should be or what other entities had proposed. During this process the review team was specifically prohibited from actions that could result in:

- *Technical leveling.* Making all technical proposals essentially equal
- *Technical transfusion.* Tipping-off proposers of other teams' ideas
- *Auctioning for better prices.* Trying to get proposers to reduce their price

Before initial proposals were submitted, UDOT held oral interviews with each design/build team. A two-hour time frame was allotted to each entity to make a formal presentation to the review team. This was followed by a recess where the review team formulated questions to ask the proposers. The interview was then reconvened and the questions were asked to the proposer .

UDOT could have awarded the contract after the initial evaluation but the option taken was to request a "Best and Final Offer" (BAFO). This process was similar to the initial evaluation process but the time permitted for proposers to revise their proposals was limited, as was the time for review. The process consisted of a short review to compare the revised submittal with the initial one and assign new ratings. The ratings were compiled by both PET and TEB and recommendations provided to the selection officer.

## **COMMITMENT REQUIRED TO PREPARE PROPOSALS**

In preparing the RFP, UDOT quickly discovered that there were few performance specifications (specifications oriented toward outcome instead of means and methods) available for DOT type work and, therefore, decided to formulate their own. These specifications were developed by task groups covering areas such as pavement, structures, etc. The task groups consisted of UDOT employees, FHWA, personnel from the construction industry and engineering consultants. More than one hundred people were involved over a nine-month period in this developmental effort. The development was managed by a small UDOT Team who guided the efforts and provided the review. This team was composed of a diverse mixture of UDOT personnel with relatively young team leadership. The management team (six UDOT employees with consultants to advise) was assigned exclusively to the project. The team was also separated from UDOT's other operations by physically relocating them to offices located in the same building as their consultant.

## **USE OF STIPEND**

Because of the significant resources necessary to propose on a project like the I-15 reconstruction, UDOT felt it appropriate to reimburse the unsuccessful proposers with a \$950,000 stipend. The intent of this payment was to: 1) ensure a maximum degree of innovation and quality in the development of the proposals, and 2) to allow UDOT to own and share with the successful proposer any innovative ideas contained in the unsuccessful proposals. Each of the three proposers spent \$3 to 5 million to develop their proposals. While the stipend apparently only covered approximately one-third of the development costs, UDOT believed it was a good faith indication of the agency's intent to proceed with the project, even though total funding had not been secured at the time the RFP was issued.

FHWA approved the use, but did not participate in the stipend. They felt it was a means of compensating teams for a portion of their proposal development costs as well as maintaining a competition that would contribute to design quality, innovation, and competitive price proposals.

## **OWNER PROVIDED INFORMATION**

UDOT elected to provide the proposers what was termed as "30%" plans, which included alignment of the project and extensive geotechnical investigations conducted within the corridor. During preliminary development UDOT had several consulting firms develop segments of the project with emphasis on development of functional geometrics for the highway, typical bridge sheets for each structure and geotechnical investigations. One of the objectives of this level effort was to identify conflicts with utilities and railroads and determine what additional right-of-way would be needed for the project. UDOT committed to obtain all rights-of-way, permits and utility agreements for the contractor and therefore needed this information.

The question has been asked whether UDOT needed to provide this level of detail to get responsible bids for the work. Interviews with both the winning team and losing teams indicate that they could have prepared their proposals with less information. The level of information did appear to reduce potential risk by defining UDOT's commitment, but much of the information provided about the roadway geometrics and structures was more than the contractors felt was needed.

Both Wasatch and UDOT have also expressed strong concerns about the use of completed plans ("sealed sets") in the documents. UDOT actually completed final plans, signed and sealed by consultants, for portions of the work, the 600 North Interchange Structure being one example. Inclusion of complete documents for this interchange was thought important to accelerate the start of construction and while it has facilitated that, there have been several problems encountered as Wasatch sought to make changes in the plans to better suit their operations. UDOT has indicated that they would not provide completed plans for future design/build projects because of the problems experienced. The time saving is now viewed as less significant given the difficulties encountered with the changes.

All parties believed that the level of geotechnical information provided was a great value. It resulted in significant time savings for the contractor because it was only necessary to supplement that information to complete the designs. UDOT estimated time savings to the project was a minimum of one year.

## **RISK SHARING**

One of the areas where UDOT made the greatest contribution to innovation was in the area of risk management. The agency went into the project with the philosophy that the entity with the best ability to deal with each area of risk should accept the specific risk. UDOT bought all of the rights of way, negotiated all the railroad agreements, negotiated all the necessary utility permits, and completed most of the exploration and drilling to collect information required to design foundations. This advanced effort gave the contractor the ability to immediately begin work after contract award.

## **INSURANCE**

After many discussions with other agencies and firms that have dealt with large design-build projects, UDOT concluded that there was a potential savings if the state purchased and managed most of the insurance required for the project. UDOT has developed an owner controlled insurance program (OCIP) which is projected to save up to \$20 million dollars over the more traditional approach. The OCIP was purchased from an insurance specialist by UDOT under a separate procurement. The broker purchased and will manage most of the insurance policies and plans needed for the project. It covers worker's compensation insurance and several types of liability insurance. The design-builder was required to prepare a very extensive safety plan and obtain approval from the insurer early in the contract. To provide additional safety

incentive, the design-builder will share in any reductions to the insurance premiums as a result of safe job performance:

## **RIGHT-OF-WAY**

When the 1-15 project was awarded, there were several right-of-way (ROW) parcels not yet acquired. To resolve this issue a ROW acquisition plan was included in the design-build contract. The ROW plan commits to having parcels acquired and available to the design-builder by certain dates so that operations will not be delayed.

## **UTILITY COORDINATION**

For the 1-15 project, UDOT formalized agreements with utilities and railroads to allow the design-builder to perform virtually all of the relocation work. This provided the design-builder much more control in meeting schedule goals and controlling the progress of work.

## **SUBCONTRACTING REQUIREMENTS**

Because of the obvious difficulty involved in tracking the amount of subcontracted work on a design-build project of this magnitude, the FHWA waived the provisions of 23 CFR 635.116, which required prime contractors to perform at least 30% of the work.

## **CHANGED CONDITIONS CLAUSE**

UDOT was also permitted to modify the standardized changed conditions clause required under the provisions of 23 CFR 635.109, because many of these clauses, such as quantity overruns, are not applicable to design-build contracts. The changed conditions clauses written into the contract are reflective of UDOT's desire to assume a fair share of the contractor's risk and minimize the dollar value of risk contingencies included in the bid price.

## **PERFORMANCE BOND**

Typically, highway construction projects require performance and payment bonds that equal 100 percent of the contract bid price. Research by UDOT's 1-15 Team indicated that it would be very difficult to find surety firms that were individually capable of, or willing to, underwrite performance and payment bonds in excess of \$250,000,000. After much discussion, it was concluded that the \$250 million bond would be adequate to protect the interests of the State and this was required in the RFP.

## **COST OF PROJECT**

A good deal of confusion concerning the actual dollar amount of the construction contract for the project surfaced after contract award. The amount of the award to Wasatch Construction was \$1.325 billion, including the options presented in the proposal that were selected by UDOT. The long term maintenance options included in the bid have not yet been exercised so those costs are not included in the current contract amount. The overall program costs total \$1.59 billion

when all of the UDOT Incurred costs attributed to the project are included. The following table presents a summary of the costs included in the overall budget.

<b>I-15 Design/Build Project —Cost Summary</b>	
<b>Item</b>	<b>Cost</b>
Management of project (UDOT and Consultant Costs)	\$50,000,000
Right-of-way Acquisition	54,582,000
Parallel Street Reconstruction for Detours	41,100,000
Preliminary Engineering (Consultants)	4,687,000
ATMS Traffic Operations Center	5,624,000
Award Fee	50,000,000
Owner Controlled Insurance Program (OCIP)	20,000,000
Wetlands Remediation	400,000
Stipend to Unsuccessful Bidders	1,900,000
Drainage (Contribution to Shared Facilities)	2,274,000
Utilities	19,000,000
Railroads	9,210,000
Public Information Program	6,180,000
<b>Subtotal Related Costs</b>	<b>\$264,957,000</b>
<b>Construction Contract – Base Bid plus Options</b>	<b>\$1,325,043,000</b>
<b>Total Project Costs</b>	<b>\$1,590,000,000</b>

During the development of the RFP, UDOT estimated the project construction costs at approximately \$1.09 billion. This amount was based upon an estimate of construction made in early 1995, prior to considering using Design/Build.

UDOT engaged a construction firm (I. A. Jones) to prepare an estimate of the project assuming a design/build approach for use in evaluating the proposals. Because the scope of the project was being modified (up until the date the RFP was released to potential proposers), the Jones estimate was not completed and available to UDOT until after the RFP was released.

UDOT elected not to disclose the Jones estimate because they felt it was available too late in the process and could negatively influence the submittals from the contractors and later during the BAFO process. Therefore, they chose to keep that estimate confidential. The proposals received from the three firms were all within 3.5 percent of the estimate prepared by Jones (\$1,384,125,109).

In retrospect, UDOT has indicated that they should have been more aggressive in updating their budget estimates, revising them each time the scope of the project was modified. UDOT strongly recommends that updates be done on future projects and that the overall estimated costs be released prior to releasing the RFP to proposers, if possible.

The contract also allows Wasatch Construction to submit changes to the contract for consideration by UDOT. As of July, 1998, Wasatch has submitted fifteen changes that UDOT has accepted with the net result being no appreciable change in the overall construction cost. This process of allowing the contractor to submit proposed changes will be continued throughout the construction period. UDOT's stated objective is to consider any potential change that will provide a level of quality or service equal to or greater than that contained in the original contract.

## **PHILOSOPHICAL SHIFT REQUIRED TO IMPLEMENT DESIGN/BUILD IN PUBLIC AGENCIES**

Going from a low bid environment to a best value contracting philosophy can be challenging for any agency. Tradition and well-established practices are not easily modified. Employees become comfortable with long established practices that have served them well so that even when consensus is reached to implement an innovative concept, institutional inertia must be overcome. Successful deployment of the design/build concept is certainly dependent on a shift in agency philosophy.

The traditional approach to contracting places the greatest risk and greatest control within the agency. The agency is responsible for the plans, specifications and estimate of quantities. Construction oversight to ensure quality is also handled by the agency. The contractor is solely responsible for constructing the project in strict compliance with the plans and specifications and within the bid amount. Design/build, on the other hand, transfers responsibility for the plans, specifications, estimates and construction management to an outside entity.

This shift in control and accountability is not readily accepted by all agency employees. Outsourcing design responsibilities may be difficult in an agency that has traditionally handled such work with in-house staff. Agency design personnel may not feel confident that consultant design firms have the expertise to perform at the same quality level. Allowing the contractor and designer to collaborate on the design may raise concerns that quality may be sacrificed for profit. The same is true with regards to construction inspection by a design/build partner. Concern that the "fox is guarding the hen house" is often an issue.

In order to achieve support and, hopefully, enthusiasm for design/build contracting it is essential that strong leadership and commitment among agency managers be present. The head of the agency must support and encourage the process since direct involvement by the agency head, while not mandatory, greatly enhances the pace of implementation. Inadequate support at the highest level will make implementation difficult, if not impossible. The agency must recognize the risks involved, accept them and provide the support necessary to carry out the effort. This may require establishing a task force or steering committee dedicated to the task. It is important that the team members involved be strong leaders, open minded to the change in philosophy and committed to seeing it through. Employees involved in the implementation must be allowed to focus on implementation.

As more agencies experiment with and adopt design/build contracting techniques the cultural changes required will be easier for others to achieve. Successful application of a new process by one's peers greatly reduces the apprehension and concerns about the process.

## **ISO 9000 CERTIFICATION**

The contract requires that Wasatch have the overall responsibility for both Quality Control (QC) and Quality Assurance (QA). The contractor's on site Project Construction QA Manager is required to be an employee of an independent QA firm that is not otherwise associated with the construction work. The construction QA Manager reports directly to the Wasatch Principal and is independent of the Contractor's construction staff. The construction QA firm performs all of the construction inspection and sampling and testing work that is normally performed by UDOT. This includes the documentation of construction activities and acceptance of manufactured materials. UDOT's construction role is limited to oversight of the QA firm's activities, verification sampling and testing, independent assurance sampling and testing, review of progress payments, and oversight of the contractor's construction management scheduling, document control, etc. UDOT is also responsible for project acceptance. They may use



Contractor provided test and inspection reports to assist them in performing the project acceptance.

The contractor is also required to have a QC program but the actual design of that QC program is left up to the contractor. While there are strict certification requirements for the construction QA personnel, there are no comparable formal certification requirements for contractor QC personnel. The QC and QA programs can be integrated, if appropriate, but all acceptance inspection and testing must be performed solely by employees of the independent entity responsible for construction QA.

In order to improve the Quality Program all major participants in the contract are required to provide and participate in a quality program in conformance with ANCI/ ASQC Q9000 1 (ISO 9000). This is an internationally recognized certification process used to assess the implementation of quality control processes throughout an organization. To comply with the contract requirements, all of the major participants of the contractor, including the independent firm responsible for construction QA, must be certified within twelve months following notice to proceed. While the certification by itself cannot guarantee a quality product, it does provide a documented process for integrating quality control with production activities and is consistent with UDOT's emphasis on a quality product.

This is a vast improvement over the process utilized on other recent Design/Build projects, where there was not a requirement for the certification. The requirement for ISO 9000 certification offers the potential for improved QC inspection and documentation, less rework, and less lost time and expense. The use of ISO 9000 can support the project goal of faster production and earlier completion, if monitored adequately.

## **AWARD FEE**

UDOT included a financial incentive in the contract called an "Award Fee" was established with the following criteria:

- Timely Performance .
- Quality of Work
- Management
- Community Relations/Maintenance of Traffic

The criteria were judged to represent the most critical elements of the project. UDOT believed that the award fee would provide an incentive to ensure performance at or above expectations and completion of the construction on or ahead of schedule. The amount of the total fee potentially available was established at \$50,000,000. The fee could be earned over the life of the contract in varying amounts. An incentive of \$5,000,000 was specifically targeted to be paid if the contractor is substantially completed with the entire project 90 days or more ahead of the stated target date of October 15, 2001.

Approximately one-half of the entire fee is based upon the Contractor meeting or exceeding Timely Performance goals. The balance of the fee is earned by a satisfactory evaluation of the Contractor's performance in the areas of Quality, Management and Community Relations/Maintenance of Traffic. The award fee amounts were pre-established for each six-month period of the contract and are payable at the end of each period. These amounts may be revised during the contract either by mutual agreement or unilaterally by UDOT. UDOT paid \$2.49 million out of a possible \$2.5 million for the initial award period and recently approved the award of the entire \$5.0 million second award period.

Since the award of the contract, UDOT has redesigned the procedures for rating the contractor on performance to provide clarification and a more objective method of judging the Contractor's performance. The original procedures were adapted from the US Navy and UDOT has chosen to fine-tune it to make it easier to administer.

Even with the revisions, the award fee process is viewed by UDOT as highly subjective, difficult, cumbersome to administer and very time consuming. Three levels of review of performance are used to determine the fee with evaluations made by project engineer and management level staff on a monthly basis and then by upper management and the Executive Director of UDOT on a semi-annual basis. The final determination of the amount of award is made by the Executive Director.

There is concern that the amount of the Award Fee is causing problems in administering the project. It is UDOT's opinion that the size of the fee has caused both UDOT and Wasatch to focus too much attention on assuring that it is administered and paid appropriately. There is also concern that the amount of the fee has negatively influenced the partnering relationship between UDOT and Wasatch. Additionally, there has been some negative public reaction to the award fee thought primarily to be due to a lack of understanding by the public of the reasons for the fee. Finally, the award fee is viewed by some as such a large portion of Wasatch's profit on the project that they are focusing much of their attention on earning the entire award fee and probably not focusing enough attention on the other aspects of the project.

UDOT now believes that the incentive was not as necessary as originally thought and indicated that they probably would not include an award fee in future design/build efforts unless it were tied closely to tangible or quantitative deliverables such as milestones and less on subjective evaluation criteria.

## **DISTRIBUTION OF PROPOSAL INFORMATION**

In preparing the RFP it became apparent that there would be more than 40,000 written pages of instructions and information as well as many thousands of drawings and pages of geotechnical reports provided to prospective proposers. UDOT wanted to provide copies of all this information to each proposer so that each had the same information on which to base their proposals.

UDOT elected to place all of this information on CD-ROM's and distribute these to each proposer. The information was indexed and four disks were required to contain the more than 70,000 pages of documents. A hard copy of the RFP information was available for examination at UDOT's office, but no hard copies were available for distribution. This was viewed by UDOT as potentially saving time for the agency and the proposer as well as reducing the expense of copying all of the information.

After interviewing the teams who proposed on the project it was apparent that this form of distribution was not efficient. It took several weeks for proposers to download, print and catalog all of the information resulting in approximately a three week delay for some proposers before all the necessary information was available to begin preparing their proposals. It was also difficult to organize the information and determine if there was anything missing. Most proposers had the advantage of having one or more of the engineering firms who had prepared a portion of the preliminary design on their teams but none of them had access to all of the information from other sources.

UDOT has since concluded that this attempt to disseminate the information was unsuccessful and plans to provide at least one printed copy of the information to potential bidders if they use CD-ROMS on future similar projects.

UDOT is continuing to distribute condensed versions of the CD-ROM information to interested agencies that want to have the bid document information. A version has been condensed into a single CD-ROM, which contains all contract information and the Wasatch proposal but does not contain the engineering drawings and geotechnical reports contained in the original RFP.

## Conclusions of Selection Process

There have been a number of lessons learned from the process used in the selection.

- *Commitment Level of UDOT Staff.* The UDOT needs to assign personnel who are willing to learn and accept a new way of conducting business to embark on the first attempts at a Design/Build project. This is needed to develop an acceptance of new ideas and procedures and to reduce the tendency to want to return to the tried and true processes.
- *Use of Stipend.* A stipend should be considered if the effort to prepare the proposal is considered to be extraordinary or the DOT wishes to own the ideas developed by each team for possible use on the project. Also it should be considered if the DOT feels that there is a need to show good faith to contractors that the project will proceed.
- *Owner Provided Information.* Provide a level of design required to define the project and the risks considered to be significant. Match the information developed with the potential risks of the project. Avoid providing completed designs prepared by others if possible to avoid conflicts over changes made during construction.
- *Risk Sharing.* The sharing of risk is a critical element of the design build project. UDOT prepared a risk matrix before the project was developed to determine the types and amount of risk and which party was best able to deal with the risk. They then assigned the risks to the parties best suited to deal with them.
- *Cost Estimates of the Project.* UDOT found that it is important to provide complete public disclosure of cost estimates during the process of selection and award of the contract. This removes the potential for confusion about the process and its costs.
- *Award Fee.* While incentive awards can be important to a project's success, care needs to be taken to make the process as objective as possible to avoid conflicts in the award of the fee.
- *Distribution of Materials on CD-ROM* Distribution of contract documents should include hard copies of all information. CD-ROM, or some other electronic method, can be used to provide access to additional copies or supplemental information not considered to be critical to proposal preparation.
- *Best Value Selection Method.* UDOT feels that the use of "best value" rather than low bid is critical to the success of this project.
- *Confidential Selection Process.* UDOT felt that maintaining absolute confidentiality during the proposal evaluation was essential to the success of the selection and award process. It resulted in acceptance of the selection process and assured fairness in the evaluation.